

Claims

1. A method of continuously manufacturing a pile weatherstrip having an integral fin, the method comprising the steps of:

wrapping a fin material around a traveling band so as to provide excess fin material

5 proximate at least one side of the band;

winding a pile material around the fin material and the band;

attaching a backer to the pile material; and

cutting the fin material and the pile material to produce the pile weatherstrip.

10 2. The method of claim 1, wherein the wrapping step comprises wrapping the fin material at least partially around the traveling band and spaced from the band at at least one location using a stationary element.

3. The method of claim 2, wherein the stationary element comprises at least one wire.

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4. The method of claim 2, wherein the stationary element is generally aligned with a centerline of the band.

5. The method of claim 1, wherein the wrapping step comprises wrapping the fin material  
20 longitudinally around the traveling band such that respective edges of the fin material overlap.

6. The method of claim 1 further comprising the step of spacing the pile material from the band at at least one location prior to cutting the pile material.

25 7. The method of claim 6, wherein the pile material is spaced from the band at the winding step.

8. The method of claim 6, wherein the pile material is spaced from the band using a traveling element.

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9. The method of claim 8, wherein the traveling element comprises at least one wire.

10. The method of claim 9, wherein the traveling element comprises three wires.

5 11. The method of claim 10, wherein two wires are disposed proximate a first side of the band and one wire is disposed proximate a second side of the band.

12. The method of claim 11, wherein the fin material is disposed between the two wires and the band.

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13. The method of claim 11, wherein spacing between the two wires converges in a downstream direction, from the winding step to the cutting step.

14. The method of claim 9, wherein the one wire is offset from a centerline of the band.

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15. The method of claim 1, wherein the attaching step comprises ultrasonic welding.

16. The method of claim 1, wherein the backer comprises a first backer element and a second backer element, such that two integral fin pile weatherstrips result when the fin material and the pile material are cut.

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17. The method of claim 1 further comprising the step of employing a stationary element disposed between the fin material and the band to facilitate the cutting step.

25 18. A pile weatherstrip having an integral fin manufactured in accordance with the method of claim 1.

19. A machine for manufacturing a pile weatherstrip having an integral fin, the machine comprising:

30 a traveling band;

a guide for wrapping a fin material around the band so as to provide excess fin material proximate at least one side of the band;

a winding station for winding a pile material around the fin material and the band;

an attachment station for attaching a backer to the pile material; and

5 a slit station for cutting the fin material and the pile material to produce the pile weatherstrip.

20. The machine of claim 19, wherein the wrapping guide wraps the fin material at least partially around the traveling band and spaced from the band at at least one location using a  
10 stationary element.

21. The machine of claim 20, wherein the stationary element comprises at least one wire.

22. The machine of claim 20, wherein the stationary element is generally aligned with a  
15 centerline of the band.

23. The machine of claim 19, wherein the wrapping guide wraps the fin material longitudinally around the traveling band such that respective edges of the fin material overlap.

20 24. The machine of claim 19 further comprising a traveling element for spacing the pile material from the band at at least one location prior to cutting the pile material.

25. The machine of claim 24, wherein the pile material is spaced from the band at the  
25 winding station.

26. The machine of claim 24, wherein the traveling element comprises at least one wire.

27. The machine of claim 24, wherein the traveling element comprises three wires.

30 28. The machine of claim 27, wherein two wires are disposed proximate a first side of the band and one wire is disposed proximate a second side of the band.

29. The machine of claim 28, wherein the fin material is disposed between the two wires and the band.

5 30. The machine of claim 28, wherein spacing between the two wires converges in a downstream direction, from the winding station to the slitter station.

31. The machine of claim 26, wherein the one wire is offset from a centerline of the band.

10 32. The machine of claim 19, wherein the attachment station comprises an ultrasonic welder.

33. The machine of claim 19, wherein the backer comprises a first backer element and a second backer element, such that two integral fin pile weatherstrips result when the fin material and the pile material are cut.

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34. The machine of claim 19 further comprising a stationary element disposed between the fin material and the band to facilitate cutting the fin material and the pile material at the slitter station.